## Simple GIS Data Wizard for USGS National Map Service

Simple GIS contains a Wizard for connecting to the USGS National Map service to query and retrieve a large assortment of freely available data including current and historical topographic maps, aerial imagery, elevation data, infrastructure data, and more. This wizard allows you to search for, download, and add this data to your Simple GIS project directly from within Simple GIS. To begin, first zoom and pan to your general area of interest within your MapDataView document in Simple GIS. Then locate the "USGS National Map Data Wizard" menu under the "Data Download Wizards" pull down menu as shown below.
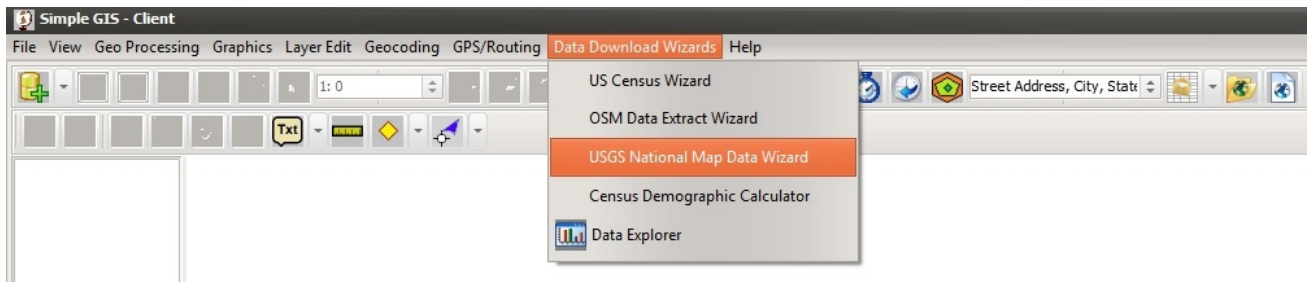

When clicked, a new dialog box will appear along the right hand side of your Simple GIS window as shown below. This dialog box is how you interact with this service.
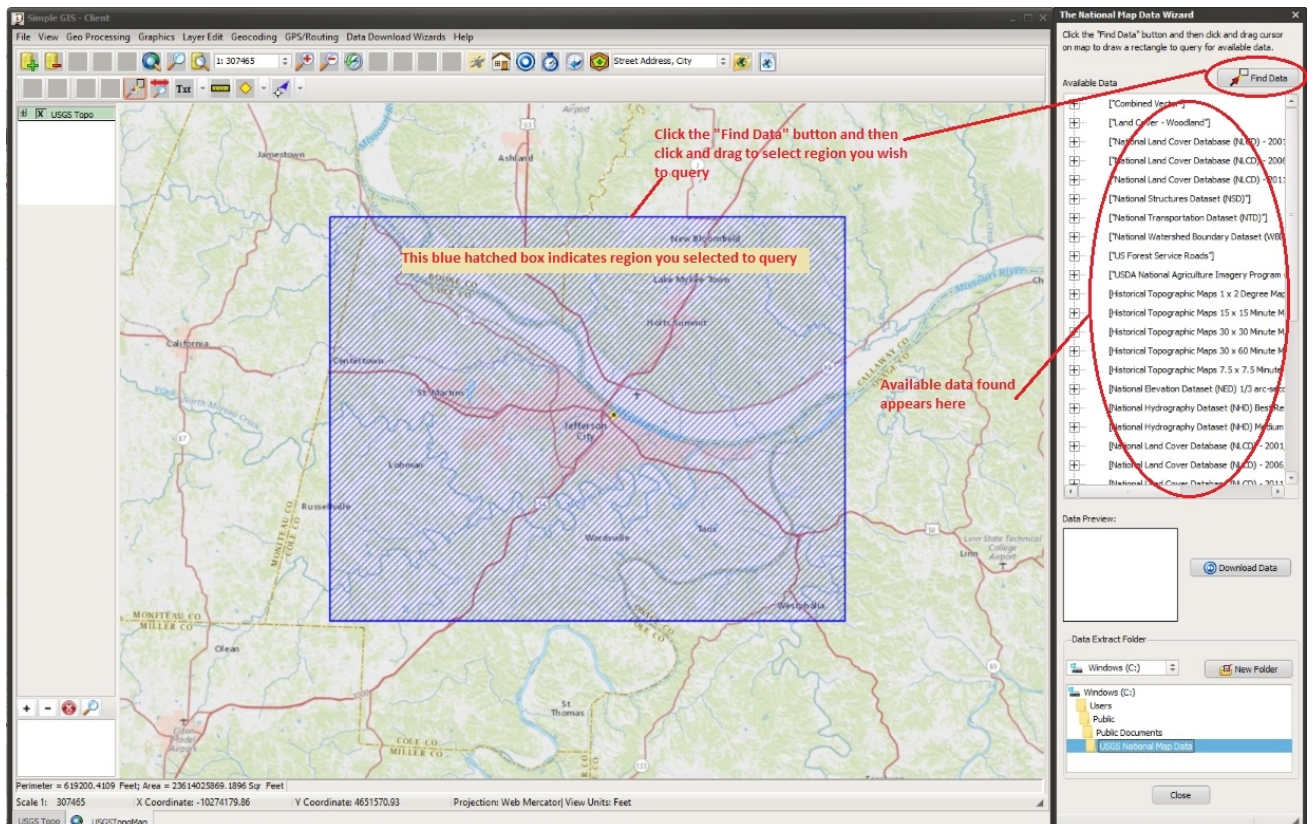

To begin, as shown above, first click on the "Find Data" button in "The National Map Data Wizard" dialog and click and drag within your map in Simple GIS to draw a rectangular region that you want to search

for available data. When you release your mouse after drawing your rectangular region, Simple GIS will query The National Map database for available data in this area and display the results in the "Available Data" list box. Simple GIS will group the results by common data theme in this list box. To expand a theme to view all available data, simply click on the "+" next to the data set to expand the list and view all available data in that grouping. In the expanded list, if you click on a data set, Simple GIS will highlight the area covered by that data set with a red hatched region on your map as shown below. Also, if you click on the "+" next to data set, it will expand to reveal select meta data about the data set such as data format, file size, and publication date. In addition, if a preview is available for the data set, it will appear in the "Data Preview" window of the dialog box as shown below:
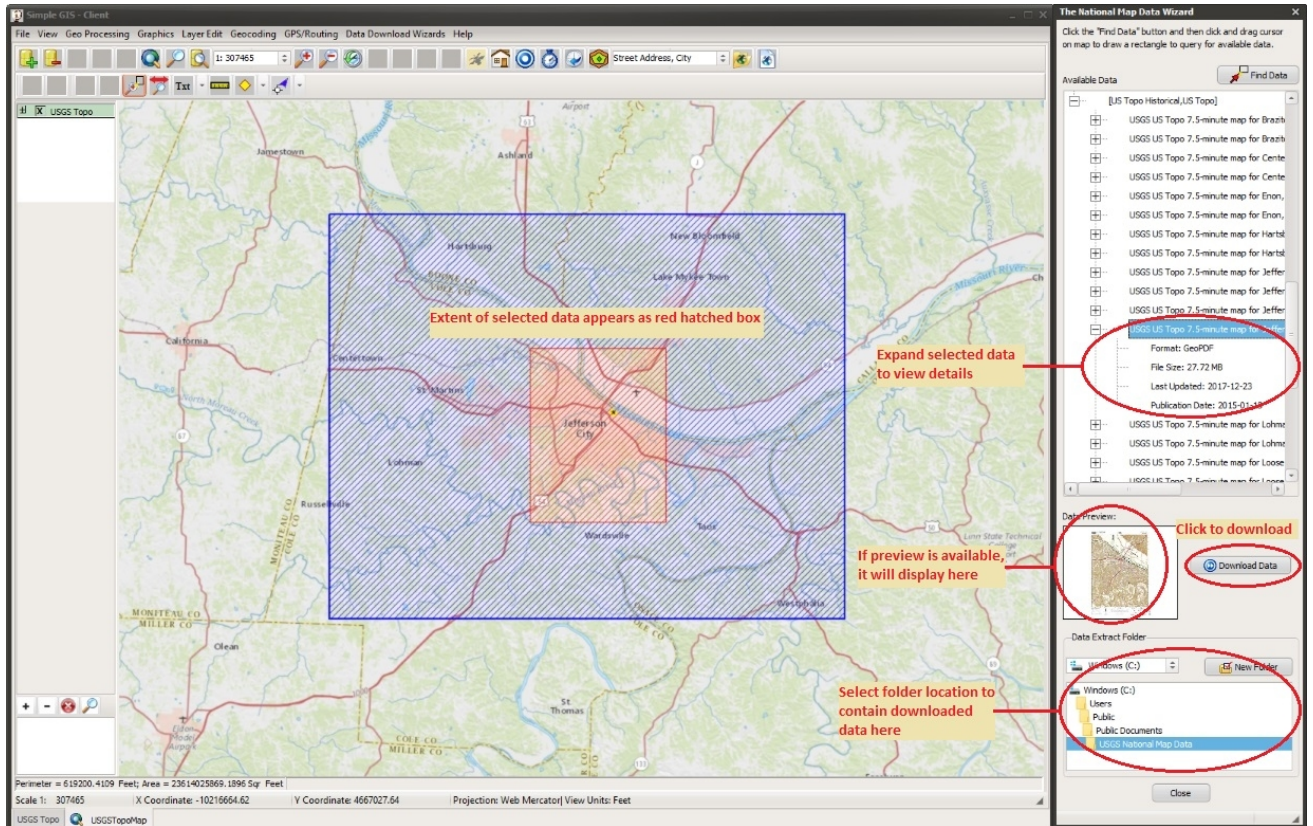
In the bottom portion of the dialog box, you can select folder location where you wish to store downloaded data. If you want to create a new sub folder under the root folder currently selected, click the "New Folder" button and enter a name for your new folder in the input box that pops up. To begin downloading the selected data, click the "Download Data" button. Progress of your download will be shown at the very bottom of the dialog box as show below:
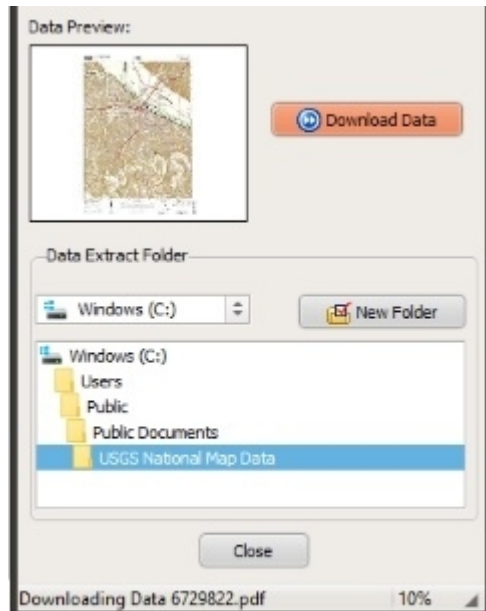
Note: Some data provided by the USGS is in Arcgrid, Georeferenced PDF, and File Geodatabase format. Arcgrid and Georeferenced PDF's will be converted by Simple GIS into GeoTiff format while File Geodatabases will be converted into shapefiles. Georeferenced PDFs can contain multiple layers. In this case, before the conversion you will be presented with a dialog box like the one show below, allowing you to specify the resolution of your GeoTiff image as well what layers from the Georeferenced PDF you want to convert.
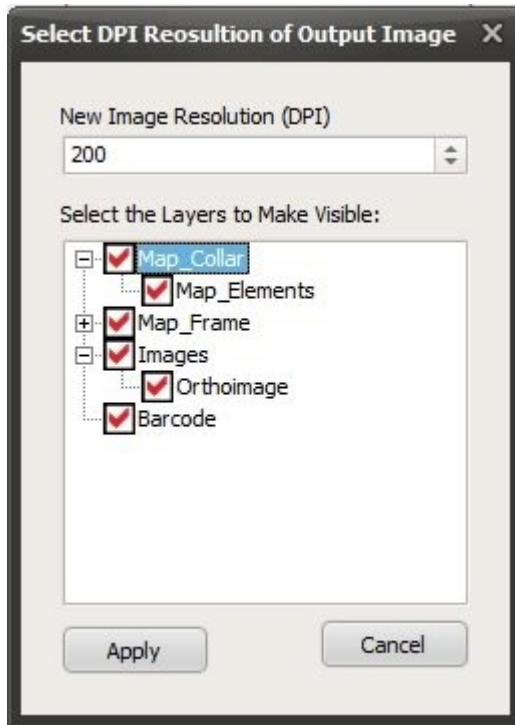
You can either accept the default resolution for the output image (150 DPI) or select a higher resolution. There are trade offs when selecting a higher resolution image. While selecting a higher resolution for your output image will increase your image quality and clarity at larger scales, it will also increase your image file size and processing time to create the GeoTiff file. The screen shots below compare three similar topographic maps created at different image resolutions all displayed in Simple GIS at a scale of 1:2400. The first image was created at the default DPI of 150 while the second image was created at a DPI of 300 and the third image was created at a DPI 400. For the first image, you can see that at this scale the image becomes grainy or pix-elated but has the smallest file size at approximately 44 MB. The second image, while clearer than the first is still a little pix-elated. However, the file size increased to approximately 174 MB. In addition, the processing time to convert the Geo PDF to the tiff image was noticeably slower. The third image at this scale still contains good image quality but the file size increased to approximately 309 MB and once again, the initial processing time of converting the Geo PDF to a tiff was longer as well. Therefore, the decision of the output resolution is left to the user depending upon the needs of the user. While the processing time is initially slower to convert Geo PDFs to tiffs at higher resolutions, this is only a one time operation. Therefore, if you have need for good image quality at larger scales, then it may be worthwhile to specify a higher resolution for your image. To select the layers you want to include in the GeoTiff, make sure the check box next to the layer name is checked. Any layers not checked will not be included in te GeoTiff.

Image DPI: 150 Default File Size: 44 MB

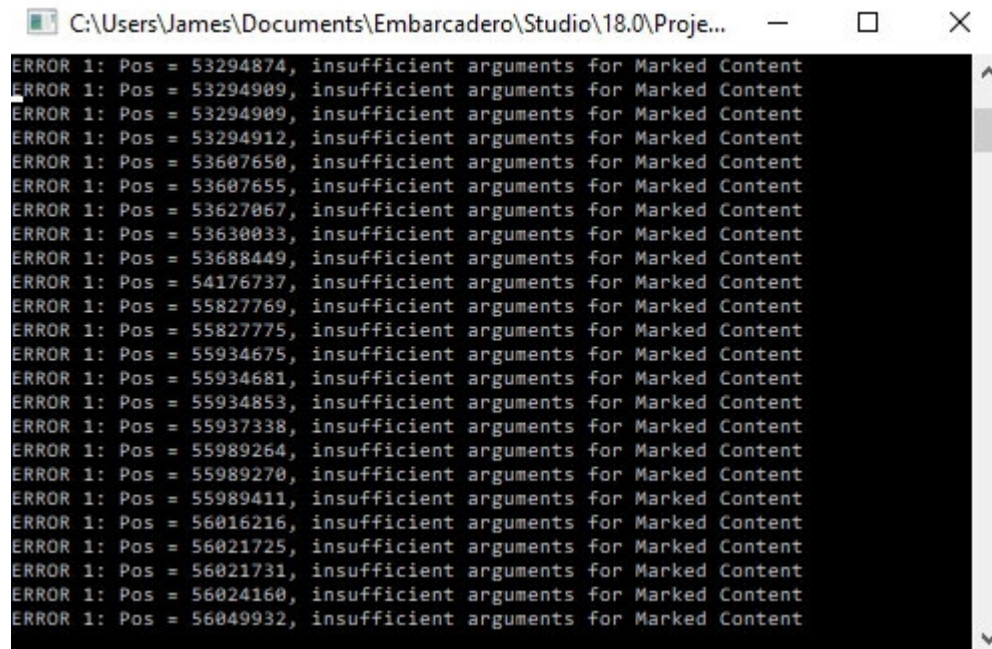Image DPI: 300 File Size: 174 MB

Image DPI: 400 File Size: 309 MB

Once you have specified your desired resolution and clicked the "Apply" button, you will see a DOS window appear showing the progress of the file conversion progress as show below. Do not close or dismiss this window. Once the file conversion process is complete, the window will automatically close.
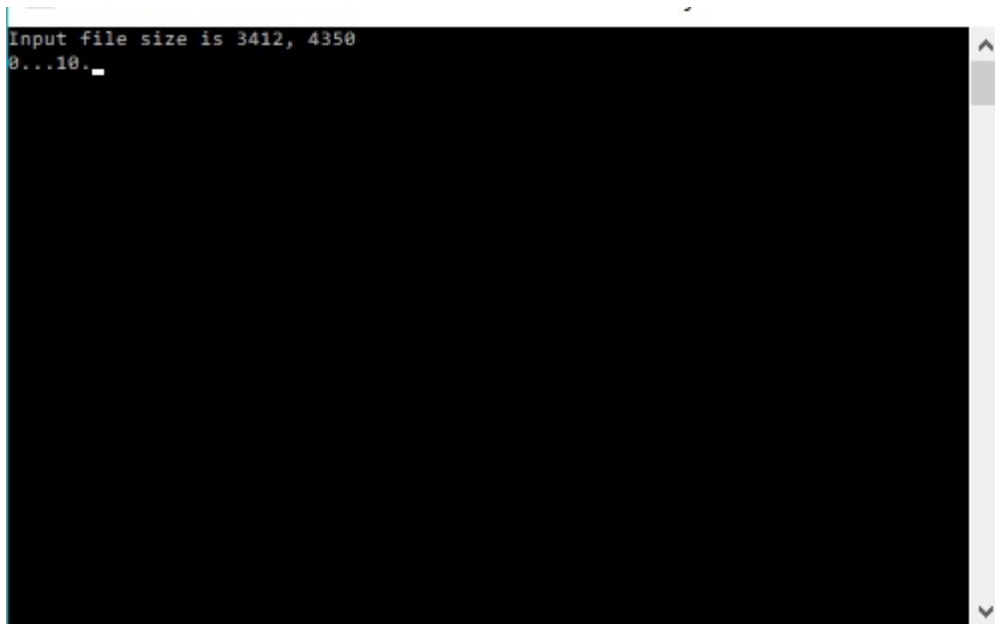
Note: Starting with the 2018 USGS Topomaps, the USGS department changed the format from GeoPDF to Geospatial PDF. While the formats are similar, there are differences and as a result,

you may see several errors reported in the DOS window during the conversion process as shown below. However, allow the process to complete (this process can take several minutes) and it will still generate the tiff file based on the PDF.

Once the data download and file conversion (if needed) process is completed, you will be prompted whether you wish to add the newly acquired data into your current MapDataView document. If you select yes, a new layer will be added to your MapDataView document referencing this data. **Note:** In most cases, when you download data through this interface, projection information for the layer will be included. However, at the time of this writing, JPEG 2000 imagery files for the "USDA National Agriculture Imagery program (NAIP)"The National Map" do not contain projection information. In this case, when you attempt to add these files to Simple GIS, you may be prompted for the projection information for the data. In most cases you can determine the projection of the data by expanding the data in the "Available Data" list in "The National Map Data Wizard" dialog box, and locating the node labeled "MetaURL:" that contains a URL link. This link is to metadata information for the data set. If you click on this node, you should be brought to a web page similar to the one shown below:
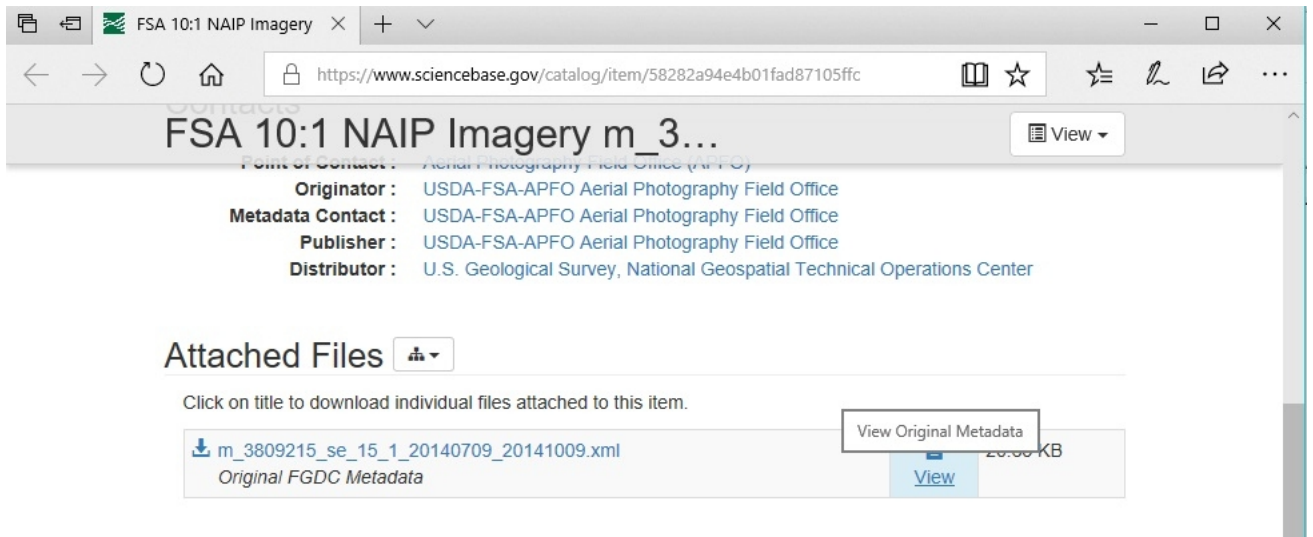
From this page you scroll towards the bottom until you see a header title "Attached Files" and look for an attached metadata XML file. You should also see a "View" link next to this file as shown below:

If you click on this link, it should open the XML file and then you would want to look for the Spatial Reference information link as shown here:
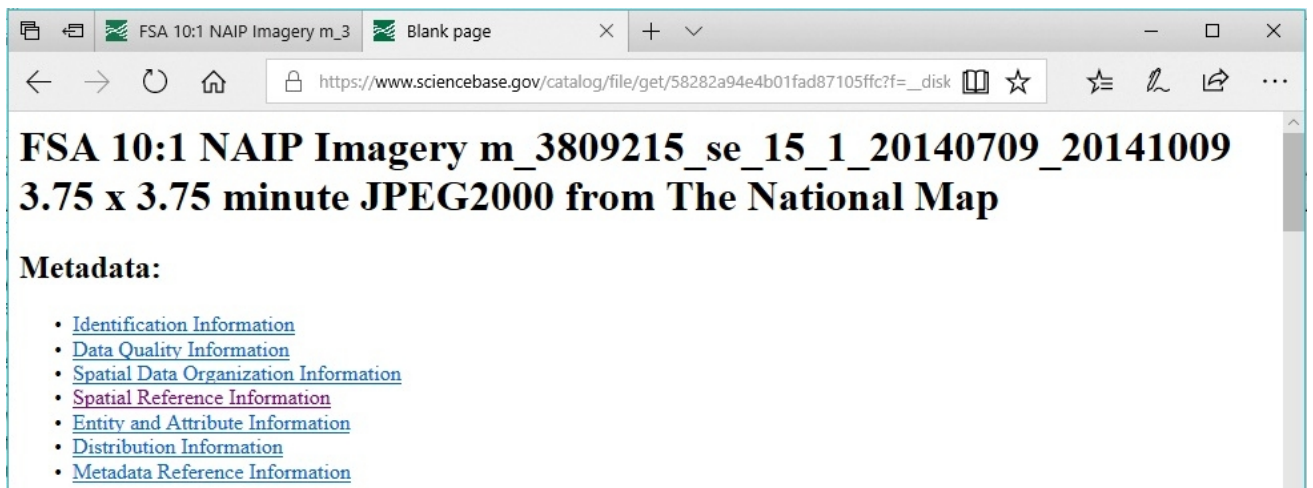
When you click this link, you should be brought to the "Spatial Reference Information" section of this document similar to what is shown below:

Spatial Reference Information:

Horizontal Coordinate System Definition:

Planar:

Map Projection:

Map Projection Name: Web Mercator Auxiliary Sphere
Mercator:

Standard Parallel: 0.0
Longitude of Central Meridian: 0.0
False Easting: 0.0
False Northing: 0.0

Planar Coordinate Information:

Planar Coordinate Encoding Method: row and column
Coordinate Representation:

Abscissa Resolution: 1
Ordinate Resolution: 1

Planar Distance Units: meters

Geodetic Model:

Horizontal Datum Name: WGS_1984
Ellipsoid Name: WGS_1984
Semi-major Axis: 6378137.000000
Denominator of Flattening Ratio: 298.257222

Back to Top

From this, you should be able to gather the projection information for the data and choose the correct projection if prompted when adding the layer. However, at the time of this writing, some of the NAIP imagery specifies that it is in UTM projection in a specific zone, but it appears the all NAIP imagery downloaded through this interface is actually in Web Mercator projection.

Once you are finished with the wizard, simply click the "Close" button at the bottom of "The National Map Data Wizard" dialog box to close window.